



Some Facts on Problematic Internet Use and Sleep Disturbance among Adolescents

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Dear Editor-in-Chief

In the last ten years, the prevalence of internet use among adolescents has extremely increased; 93% of adolescences of ages 12–17 yr old go on-line in the U.S, as do 93% of Japanese, 71.8% of Chinese, and 74.5% of Indian adolescents (1). Similarly, internet addiction prevalence in Iranian high school students was 22.2%, in Indians 25.5%, in Tunisians 18.05%, in Taiwanese 10.6% and in Turkish 07.9% (1). Compared to those without internet addicts, the internet addicts had higher rates of psychopathy (65.0%), suicidal thoughts in a week (47.0%), history of suicide attempt (23.1%), and attempt for suicides in one year (5.1%) (2).

Internet addiction and other problematic internet use behaviors can have important influence on the sleep-wake program, leading to sleeplessness and other sleep disorders. Heavy internet use associated with insomnia, also increased time paid on the internet led to the important disturbance of sleep (3, 4). One psychophysical mechanism that could help to clarify the negative influence of problematic internet use on sleeping habits can be that nighttime computer use causes a state of high arousal, therefore, interfering with the soothing procedures that are essential for

sleep (5). The relationship between sleep disorder and mental disorder such as depression is bidirectional and two disorders might feedback on each other to sustain mutually their existence (6).

Depression might similarly lead to sleep disorder in depressed children by disturbing circadian regulation, preserving a negative state, and decreasing both regular exposures to bright light and societal activities. In China, 17.2% of adolescents had the criteria for problematic internet use, 40% were classified as suffering from sleep disturbance, and 54.4% had depressive signs (7). Problematic internet use was significantly related with depressive signs and sleep disorder. In this study, the correlation among depressive signs and sleep disorder was highly significant. Therefore, both problematic internet use ($\beta = 0.014$; Sobel test $Z = 12.7$, $P < 0.001$) and depression ($\beta = 0.232$; Sobel test $Z = 3.39$, $P < 0.001$) had partially mediating effects on sleep disturbance (7).

Turkish high school students, with addictive internet use were more probable to have trouble in falling asleep and had nightly awakenings. Problematic internet users and addictive internet users were sleep meaningfully less than moderate internet users (8). In a random sample of students

from 15 schools in Flanders, Belgium observed that children who paid more time consuming the internet went to bed significantly later during the week and in the weekend. They woke up later on weekend days, spent less time in bed in the week and reported greater levels of tiredness (9). In high school students in South Korea, the odds of excessive daytime drowsiness were 5.2 (95% CI: 2.7–10.2) fold higher in internet addicts and (1.9 95%CI: 1.4–2.6) fold higher in possible internet addicts compared to non-addicts (10).

Some related factors of problematic internet use include health problems such as migraines, back-ache, overweight or obesity, inadequate rest and psychological aspects such as eating disorders, mental disorder, depression, family problems and discrimination. Certain disorders in the prefrontal cortex probably driven by dilapidated dopamine neurotransmission are associated with signs of internet addiction (11). These results exhibited the importance of appropriate management and monitoring of a child's and adolescents internet use by parents and teachers. These results on internet addiction were worrying and show importance of creating an internet addiction prevention program that will emphasize on training of children or adolescents, parents and high-school professors.

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